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NTS MC&A History

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ABSTRACT:

Within the past three and a half years, the Nevada Test Site (NTS) has progressed from a Category IV to a Category I nuclear material facility. In accordance with direction from the U.S. Department of Energy (DOE) Secretary and National Nuclear Security Administration (NNSA) Administrator, NTS received shipments of large quantities of special nuclear material from Los Alamos National Laboratory (LANL) and other sites in the DOE complex. December 2004 was the first occurrence of Category I material at the NTS, with the exception of two weeks of sub-critical underground testing in 2001, since 1992. The Material Control and Accountability (MC&A) program was originally a joint-lab effort by LANL, Lawrence Livermore National Laboratory, and Bechtel Nevada, but in March 2006 the NNSA Nevada Site Office appointed the NTS Management and Operations contractor with sole responsibility. This paper will discuss the process and steps taken to transition the NTS MC&A program from multiple organizations to a single entity and from a Category IV to a Category I program. This transition flourished as MC&A progressed from the 2004 Office of Assessment (OA) rating of "Significant Weakness" to the 2007 OA assessment rating of "Effective Performance." The paper will provide timelines, funding and staffing issues, OA assessment findings and corrective actions, and future expectations. The process has been challenging, but MC&A's innovative responses to the challenges have been very successful.

INTRODUCTION:

December 2004 the Nevada Test Site (NTS) received Category I nuclear material for the first time since 1992, with the exception of two weeks of underground testing in 2001. This material was sent under direction from the U.S. Department of Energy (DOE) Secretary and National Nuclear Security Administration (NNSA) Administrator; NTS received shipments of large quantities of special nuclear material from Los Alamos National Laboratory (LANL) and other sites in the DOE complex. NTS Material Control and Accountability (MC&A) progressed from several organizations operating Category IV programs, to a Joint-Lab (LANL, Lawrence Livermore National Laboratory [LLNL], Bechtel Nevada [BN]) Category I program, to a Management and Operations (M&O) Contractor program for the entire NTS. This was the beginning of an interesting journey for NTS MC&A!

DISCUSSION:

NTS MC&A received a RED rating "Significant Weakness" from the DOE Office of Assessment (OA) in August 2004. Although MC&A was still a Category IV program when the OA visited, it was assessed at Category I standards in preparation for receipt of

Category I materials. Weaknesses were identified in the areas of the MC&A Plan, training, performance assurance, and management with six findings. One of the corrective actions called for the MC&A Implementation Panel to review the MC&A Plan, which was done in October 2004. It was decided to combine the existing programs, NNSA Nevada Site Office (NNSA/NSO), LLNL, LANL, and BN, with NNSA/NSO assuming their appropriate role of oversight. LANL requested ownership of the MC&A program because the majority of the material came from them. LLNL and BN played supportive roles. Critical training was developed for all MC&A functions. Key personnel completed the training by December 2004. Management (LANL, LLNL, and BN) began the slow process of filling required positions with qualified personnel. MC&A procedures had to be written, reviewed, and approved. The MC&A group consisted of a part-time acting LANL MC&A Manager, a full-time Accountant from Wackenhut Security Incorporated (WSI), a part-time LLNL Accountant, part-time LLNL System Administrator, part-time BN Performance Assurance, and part-time Administrator. Each laboratory was able to call on subject matter experts (SMEs) from their home organizations or subcontractors to fill other roles, such as Training Coordinator, Performance Test Personnel, Material Control Officer, Measurement Control Officer, and Measurement team. NTS was approved for Category I nuclear material operations in December 2004.

The year 2005 brought an increase in staffing with a full-time acting MC&A Manager from LANL, an Administrative Assistant from BN, an Accountant/Nuclear Material Representative from LANL, a System Administrator from LLNL, and an Assessment Coordinator from BN with part-time staffing from LLNL and LANL including acting Deputy Manager from LLNL, Accountant from LLNL, Training Coordinator from LANL (subcontractor), and a Measurement Control Officer from LANL. They also put in place the NTS MC&A Independent Advisory Board, an appointed group of non-resident SMEs from each organization. The NNSA/NSO MC&A Program Manager position was a part-time position until April 2005, when a full-time employee was hired.

In July – September 2005, the OA returned to the NTS. The MC&A program received a YELLOW rating “Needs Improvement.” Weaknesses were found in the areas of performance assessment and measurements with two findings. Repeat findings were not issued, although there were still concerns regarding inadequate staffing and funding, a fragmented training program, and insufficient assessment data to document full compliance to the DOE Order. The corrective actions were to status NNSA/NSO regarding all current findings and to create an assessment/performance testing schedule. All performance requirements were to be verified and all required procedures were to be revised. Corrective actions for measurement issues included documenting measurement techniques, procuring measurement equipment, developing procedures and qualifying personnel. At the end of the 2005, NNSA NA-70 and NNSA/NSO determined progress was not adequate and decided MC&A should be within the M&O contract. BN brought in a transition team from BWXT in November 2005 to further develop the program. Their focus was on inventory verification and procedures. This effort was successfully completed in February 2006.

In March 2006 the MC&A Program was officially transferred from Joint-Lab to BN. In July 2006, the M&O contractor became National Security Technologies, LLC (NSTec). In May of 2006, MC&A was fully staffed with an MC&A Manager, Administrative Assistant, Material Control Officer, Measurement Control Officer, Program Compliance Officer, Training Officer, a Local Area Network Material Accounting System (LANMAS) System Administrator, two Accountants/Tamper Indicating Device Administrators/Nuclear Material Representatives, two Measurement Technicians, and five Material Balance Area (MBA) Custodians. In September 2006, all required MC&A procedures were approved and implemented. Many of the staff were new to MC&A but brought a wealth of experience from other organizations and a desire to learn. This combined with a management team with extensive MC&A knowledge created a fully functional MC&A program destined to be successful.

Due to program and facility issues, opening containers and performing verification measurements of the TA-18 materials from LANL did not begin until December 2006 with special permission from NNSA/NSO for two containers. The contents of these containers were clad items required by another project for testing. The Device Assembly Facility passed the Management Self-Assessment at the end of January 2007 and in June 2007 began opening containers and performing verification measurements.

During 2006 NTS MC&A participated as a test bed for Safeguards First Principle Initiative (SFPI), an objective-based standard/risk-based model to replace the requirement-based order program. SFPI allows each site in the complex to tailor their MC&A program to their materials and missions. It places the burden on the contractor to be creative and innovative for a cost-effective and efficient approach to MC&A. NTS MC&A's "young" staff shined during the implementation. They brought a new perspective without a lot of the "this is how we always have done it" views. The more "seasoned" MC&A staff added the necessary grounding. The SFPI Comprehensive Assessment of Safeguards Strategies (COMPASS) model consists of elements and sub-elements designed to quantify the effectiveness of the NTS MC&A program. Preparations at the NTS began in March 2006 and full implementation of SFPI was realized in January 2007.

In 2006 NTS MC&A had closed all open findings and had implemented all the necessary program requirements. The OA returned in October 2007 and MC&A received a GREEN rating "Effective Performance" with one finding. The OA determined the MC&A Plan did not provide adequate safeguards authorization basis for MC&A operations under SFPI. The corrective action was to have an independent review of the MC&A Plan; this effort is on-going. They also noted strengths: a comprehensive and certified training program, embedding the MC&A Custodians into operations, and having a comprehensive assessment program.

CONCLUSION:

MC&A at the NTS is a fully implemented program. It has been a long road with several detours, but with determination, perseverance, and a winning team, success has been achieved! MC&A currently supports U.S. Department of Homeland Security (DHS) testing, gas-gun operations, sub-critical experiments, Orphan Source Recovery Program,

measurement of received material, and storage of material. MC&A works closely with many NSTec organizations and interfaces with the national laboratories, sites throughout the complex, DHS, and contractors. In the future this support will continue by sustaining a strong MC&A program at the NTS.